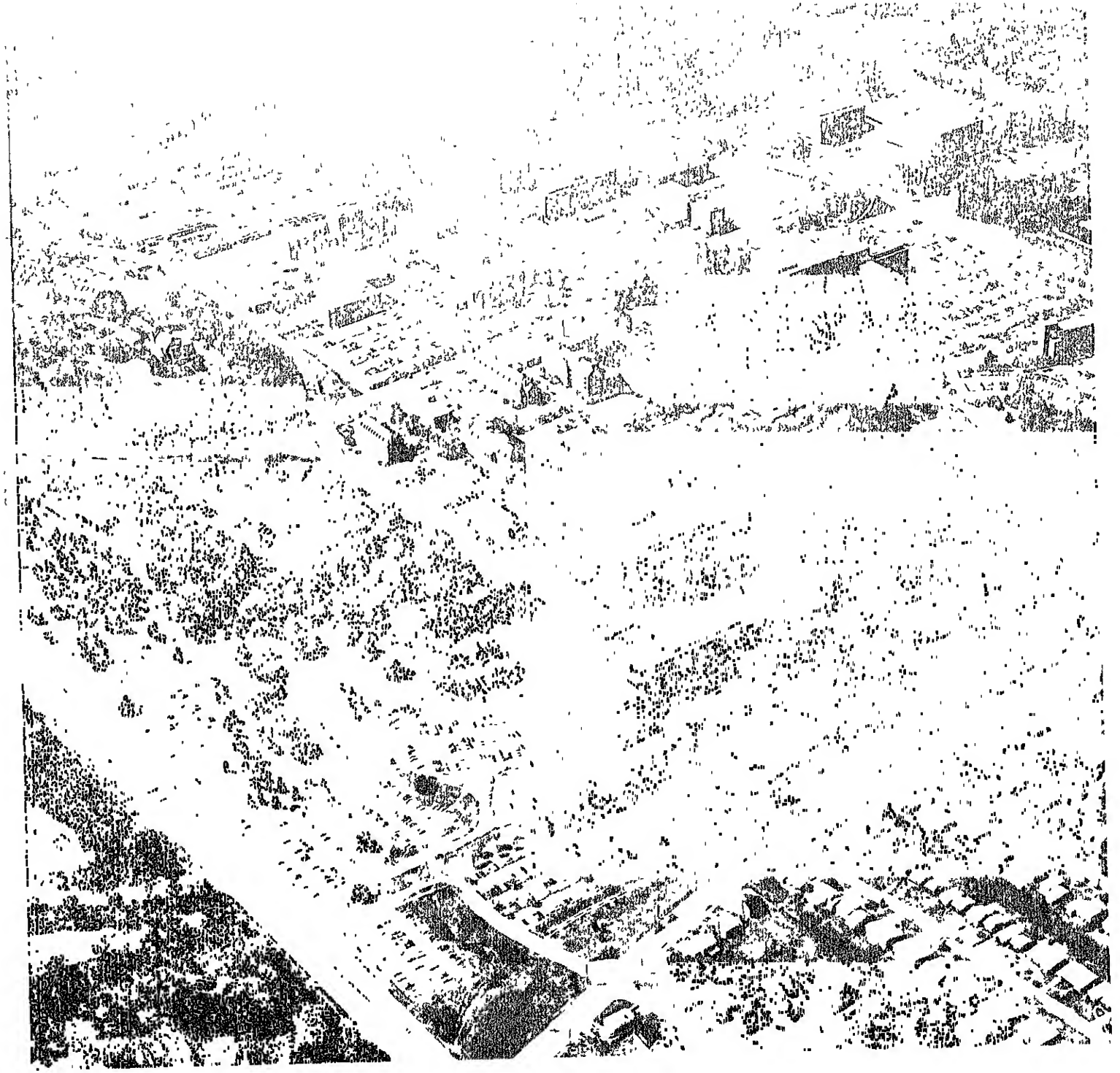

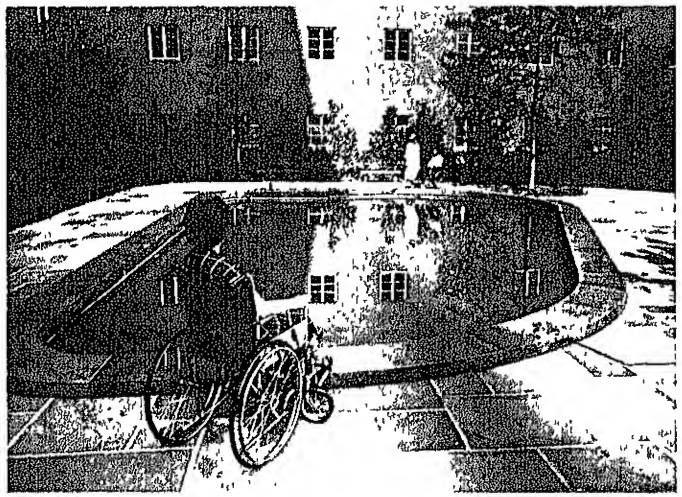

"Pools of Bethesda" on either side of main entrance to the Clinical Center were inspired by the biblical passage in St. John 5, which describes the healing of the lame man near the pool called Bethesda in Jerusalem.

Foreword

We hope that this Clinical Center brochure will give you a view not only of the modern structure and patient-care facilities of this closely integrated laboratory and hospital, but also of people with a mission—research for better health.

Among these people, our patients—all-important members of the research team—deserve a great share of credit as today's research becomes tomorrow's routine.

THOMAS C. CHALMERS, M.D.
Director, Clinical Center

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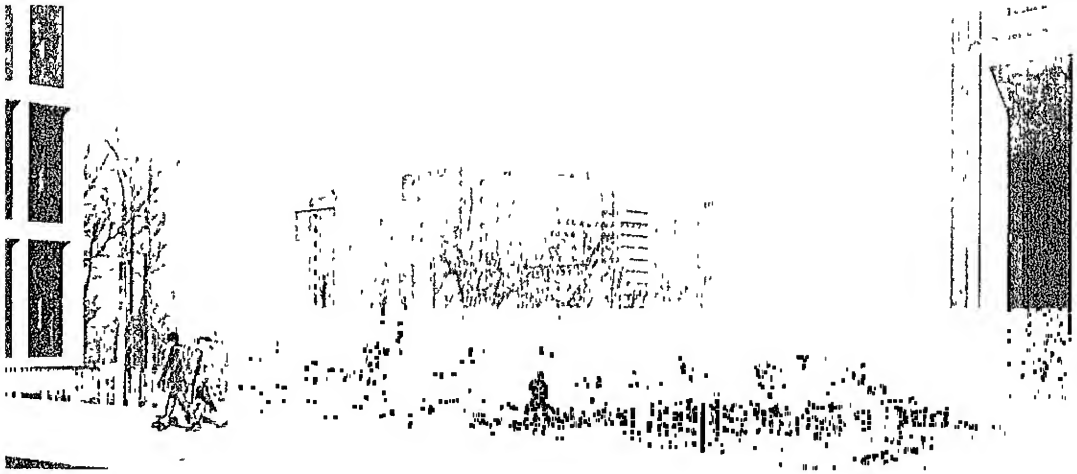
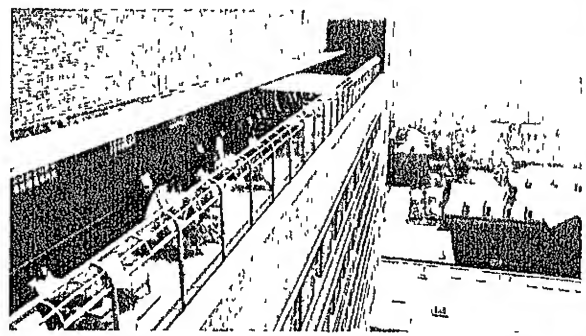


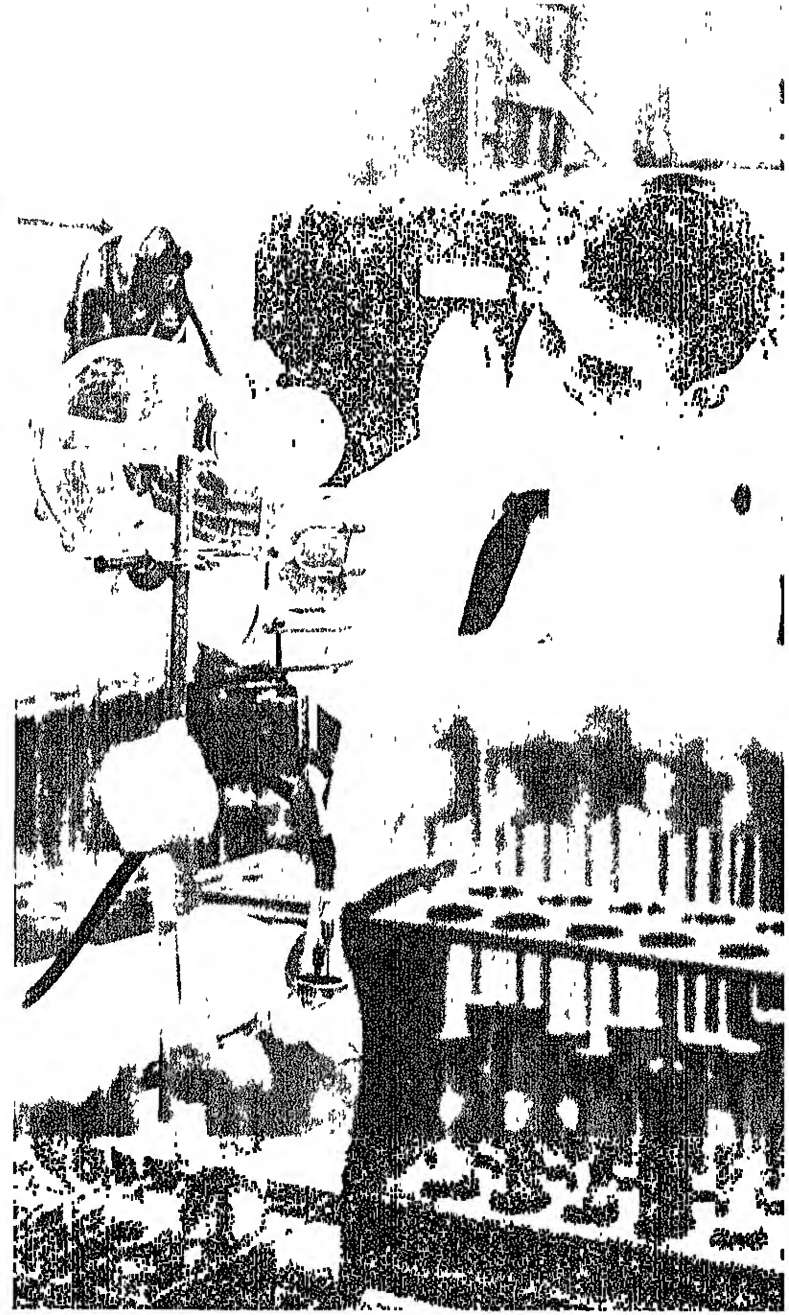
Top. The Clinical Center—southwest view showing the circular neurosurgery and cardiac surgery wing.

Left All patients' rooms are planned to accommodate two patients

Right. Pharmacist prepares a sterile medication Sterility tests are performed on all injectable drugs prior to administration to Clinical Center patients

Bottom · This sundeck, 14 stories high above the rolling hills of Bethesda, Md., is enjoyed by many patients.





The Clinical Center

The Clinical Center of the National Institutes of Health in Bethesda, Md., is a 14-story, 516-bed research hospital with twice as much space devoted to laboratories as to patient care areas.

It is a modern structure designed to bring scientists working in 1,100 laboratories into close proximity with clinicians caring for patients, so that bench investigators and physicians may collaborate on problems of mutual concern. Thus, the Clinical Center has been called the place for the complete look at the whole problem.

Clinical research strengthened

Many years ago, Public Health Service research was largely devoted to investigations conducted at the sites of epidemic outbreaks of infectious diseases. However, as far back as 1911 it was recognized that lack of a clinical facility especially designed for research was hampering the effectiveness of Public Health Service investigations. Changing national health patterns led Congress to initiate in 1947 a large expansion of funds for both Federal and non-Federal medical research; the parallel and progressive strengthening of NIH's own research activities in Bethesda made facilities for clinical study essential. Design and construction of the Clinical Center were begun in 1948. The first patients were admitted in 1953.

Mission: Study prevalent diseases

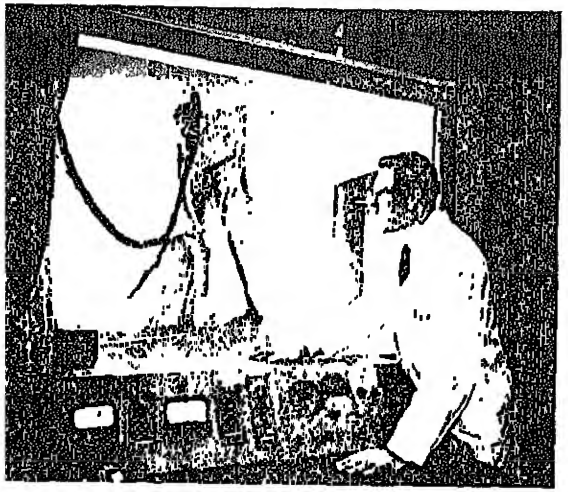
Authorized by Congress specifically for medical research purposes, the Center does not offer general diagnostic and treatment services in the same sense as do most hospitals. Patients are selected—after referral by their physicians—solely because they have a precise stage of an illness needed in a particular study being conducted by one or more of the Institutes.

Contrary to the assumption sometimes made by people who think of medical research as being primarily concerned with mysterious and exotic diseases, the illnesses under study at the Clinical Center have, from the beginning, been those which are all too common in people throughout the Nation. Ranging from the common cold to cancer, the widespread maladies being investigated reflect a *public health* mission—to accomplish the most for the greatest number.

Patients on the team

While the diseases that plague people have not in essence changed much over the years, the research approach to them has. Early disciples of medical scientists such as Koch and Pasteur made significant advances using individual skills alone; some investigators still work that way—but research today must look to teamwork for the most consistent progress. In studying the way drugs react within the body, for example, the research patient may be a member of a team that includes not only his physician and nurse but also the biochemist, pharmacologist, physiologist, roentgenologist, rehabilitation worker and others.

Although the Center was established and is operated solely for research purposes, the welfare of the patient takes precedence over every other consideration. Methods of treatment are substantially the same as those accepted and used by well-qualified physicians everywhere. The Clinical Center is not a place to expect miracles; the gaining of new knowledge is gradual and seldom dramatic.



Upper left: The metabolic chamber shown here is employed to measure respiration and perspiration as a Clinical Center normal volunteer patient exercises on a treadmill.

Upper right: This electron microscope, one of several in use at the Clinical Center, permits visualization of objects, such as viruses, too small to be observed with ordinary optical microscopes.

Lower: A young patient is going home.

When participation in a study is completed and their condition permits, patients are returned to the care of their own physicians; periodic followup examinations or treatments may be given for months or years.

Many facets to clinical research

The programs conducted by the various NIH Institutes, and the National Institute of Mental Health, employing the facilities of the Clinical Center are concerned with hyperimmune states and infectious diseases, arthritis and metabolic diseases, cancer, child health and human development, dentistry, heart and blood vessel diseases, mental illness, and diseases of the nervous system including the organs of special senses.

Each year when the Institutes report to Congress on research progress, a share of the credit for the year's accomplishments always goes to the patients of the Clinical Center who participated in certain of the studies mentioned. When new drugs effective against antibiotic-resistant forms of staphylococci were developed, Clinical Center patients took part in final tests to demonstrate the efficacy of these compounds. Trials of chemotherapy of certain forms of cancer have shown some promise; a few women treated for a rapidly growing form of cancer that develops in the uterus after pregnancy have remained free of the disease for a number of years after drug treatments. Clinical Center patients enabled Public Health Service scientists to make the first direct measurements of the rate at which human tissues manufacture antibodies against diseases; studies of this vital "defense factory" still continue. Other research has provided better methods of heart surgery; new understanding of both psychic and somatic aspects of mental illness; the first drugs to cure certain systemic infections by fungi; new tests and treat-

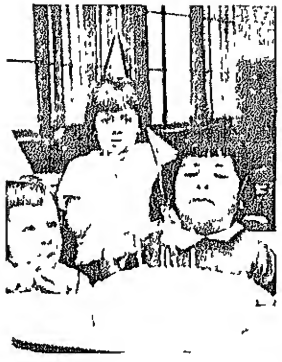
ments for rheumatoid arthritis; clinical progress against neurological diseases and blindness; improved methods of dental care—these findings represent accomplishments of Institute investigators at the Clinical Center of the National Institutes of Health.

The Center is a focus for much of this work but is not the circumference of NIH research, for the Institutes help to support thousands of studies in laboratories and clinics throughout the world, through a program of research grants and contracts. The Institutes also conduct basic and applied research in their own laboratories at Bethesda and at field stations elsewhere, and stimulate training in the medical and related sciences, primarily by awarding fellowships and training grants.

Architectural design

A typical floor of the Clinical Center has two nursing units of 13 rooms, each room accommodating 2 patients. The nursing stations and facilities are in the main portion of the building between two wide corridors. Along the south corridor are the patients' rooms, and along the north corridor, the clinical research laboratories. Studies not directly involving patients are conducted in the building's several wings. Special facilities for heart and brain surgery are provided in a circular-design surgical wing added in 1963.

The typical floor has space for approximately a hundred laboratories. The number and dimensions of these laboratories can be varied as the need arises, since full use has been made of demountable partitions and interchangeable standard equipment. While unity of operations is maintained, the patients are sufficiently separated from the laboratories to give maximum comfort and privacy. For example, the two-corridor plan and separate banks of elevators effectively separate traffic to the patient and laboratory areas.



Left. Every patient gets a birthday cake.

Lower: Patient in wheel chair is surrounded by the staff members who contributed to his care—this is the research team.

Special facilities

Because some patients participate in long-term studies, every consideration has been given for their comfort. A solarium is available to patients on each floor; the Center operates a library exclusively for patients; there is a recreation hall with space for rolling beds and chairs; a chapel with a revolving altar for different faiths; and special attention is given to occupational, recreational, and physical therapy as part of a broad program of rehabilitation. There are dining rooms, a pleasant cafeteria, barber and beauty shops, post office, and even a bank. Everything possible is done to make the patients' stay as pleasant as possible and in this way to encourage them to stay throughout the entire period of a research project. They can, of course, leave at any time they wish—however when the patients are admitted the general outline of the study is explained to them, the importance of their role is emphasized, and their cooperation for the duration of a study is enlisted.

Normal volunteer patients

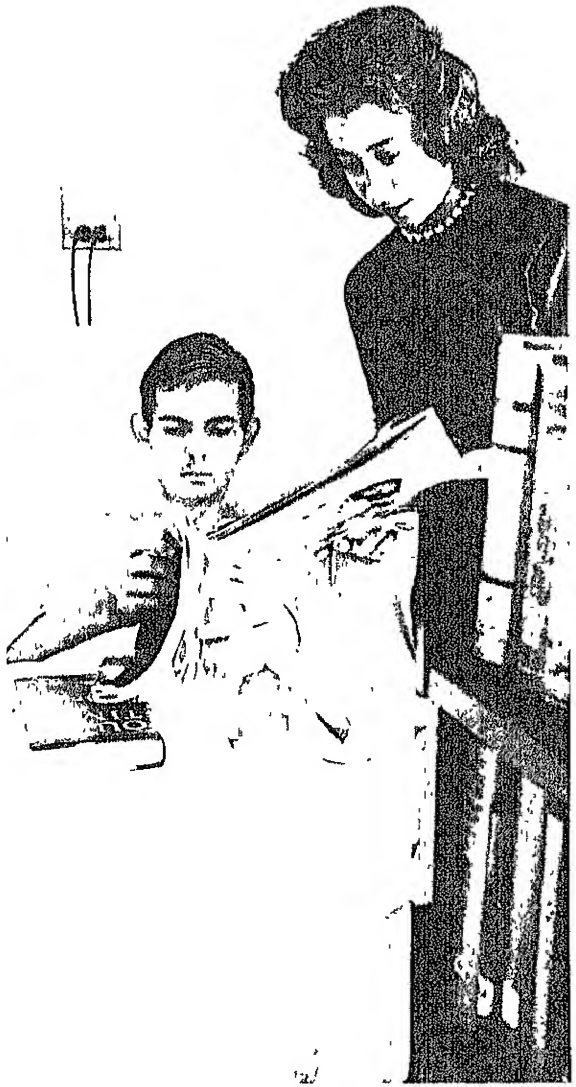
To provide the baseline of health needed for certain studies, the Clinical Center has a normal volunteer patient program. The selection of these patients is based primarily on a medical need and for the most part they are recruited through special arrangements with certain universities, colleges, church organizations, and civic groups with whom NIH has contracts. A healthy volunteer may experience minor discomfort, inconvenience, or boredom while participating in the research studies; but all procedures are carefully screened from the viewpoint of his safety and welfare. Many volunteers receive vocational training while at the Clinical Center. For example, a young college graduate who learned research procedures while she was a normal volunteer patient stayed to accept a full-time position with one of the research laboratories. Reimbursement to volunteers is paid to the organization which sponsors them.

Patient admission procedures

Most of the research at the Clinical Center is concerned with the more common serious diseases. For this reason, the Center seldom admits patients with rare and unusual diseases or those with conditions which physicians have been unable to diagnose. The important principle of admission is that it is based upon a physician-to-physician communication. A leaflet entitled "Patient Admission Procedures" is available from the Clinical Center for people who are interested in being considered as study patients. Patients can be admitted only when recommended by their own physicians. The Clinical Center periodically circulates to interested physicians throughout the Nation descriptions of research currently being pursued. This information in the form of announcements, and a brochure "Current Clinical Studies and Patient Referral Procedures," is available only to physicians. It is sent to those who have referred patients in the past, or who request to be placed on the Center's mailing list.

The number of beds available for a particular study and the length of the waiting list of qualified patients also are important in determining if and when an individual can be admitted. Research on a particular disease may be such that only one or two patients can be studied at a given time.

Each of the Institutes is responsible for planning and conducting its own research in the Clinical Center. When an aspect of a disease is selected for study, the methods of approach are determined by a research team, which may include scientists from more than one Institute and from other research organizations.

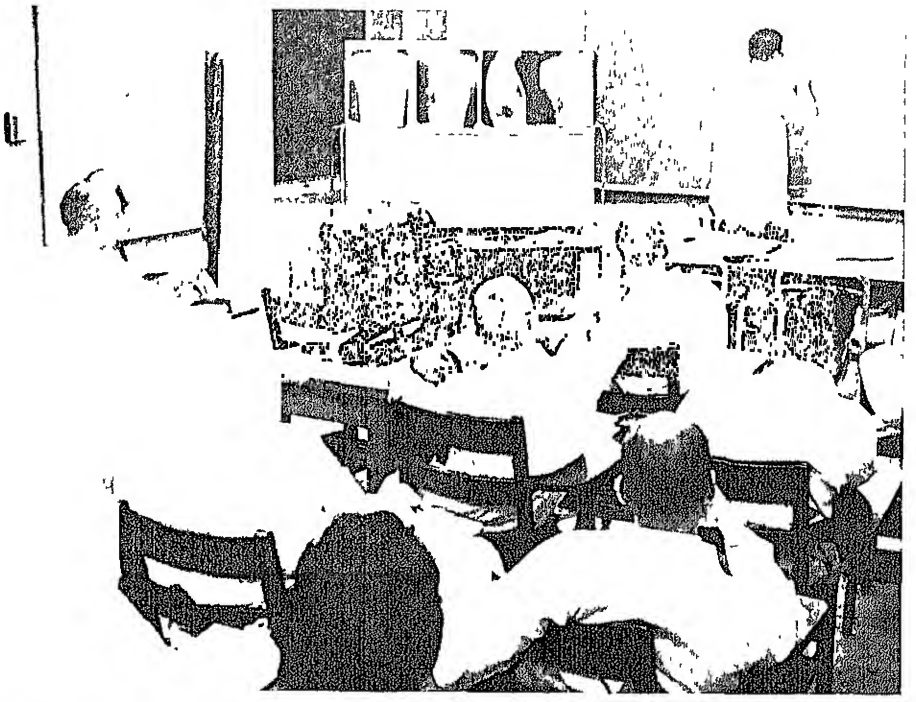


Upper left: Radiopharmaceutical preparations for patients are compounded, assayed, and safety checked by Clinical Center Pharmacy.

Center: Clinical Center Chapel.

Right: Book cart from the Patients' Library provides service to bed patients.

Bottom: Heart-lung machine (lower left) aids surgeon here performing open-heart operation in Surgical Wing opened in 1963. Recording room in central position contains physiological monitoring and other electronic equipment to help the operating team.



Regular conferences provide for in-service professional education.

Small patient provides a blood sample.

Supporting services are research oriented

The primary mission of the Clinical Center is to provide the specialized forms of hospital care necessary for Institute studies of both normal and abnormal physical and emotional phenomena in patients. The supporting services include nursing care, clinical pathology, nutrition, social work, diagnostic radiology, anesthesiology, pharmacy, rehabilitation, medical records, blood bank, and other services found in a large, modern hospital.

In addition to the permanent staff, there is a constantly fluctuating population of guest scientists, clinical fellows, clinical associates, research associates, consultants, advisors, lecturers, and visitors, representing literally every professional category in the world of clinical medicine and biologically oriented science. Clinical fellows, for example, are appointed to those Institutes and professional departments where residency training, approved by an American Specialty Board, has been developed—in psychiatry, periodontology, clinical pathology, and others.

An average of 4,000 persons with medical, scientific, and paramedical interests visit the Clinical Center each year; of these, about 25 percent are from foreign countries.

The research mission of the Clinical Center guides the activities of the several services beyond levels customary in most hospitals. For example, at the Clinical Center nurses find the time, equipment, instruction and guidance to function as effective members of the research team. Nursing research is an integral part of day-to-day patient-care activities. This type of study has helped in assessing the value of the latest, specially designed electronic monitoring systems for patients requiring close and constant physiological observations.

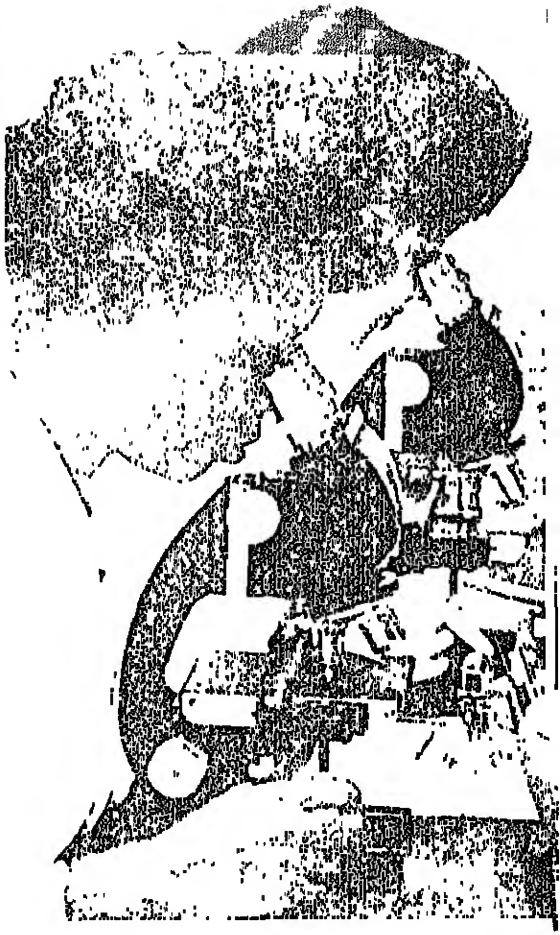
The Social Work Department, also, is involved in the total clinical research program. Increasingly, clinical investiga-

tors request social workers' collaboration in the study and treatment of the social components of chronic diseases.

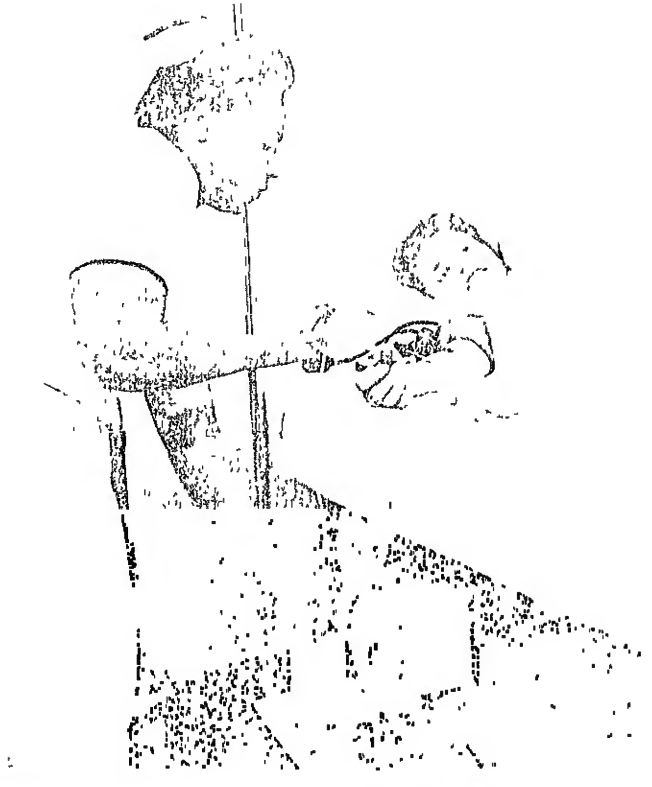
Every department of the Clinical Center is affected by the primary research mission and provides examples of progressive medicine; the utilization by anesthesiologists of heart-lung-bypass, hypothermia apparatus and advanced instrumentation as an aid to monitoring when giving anesthetics in the surgical suites; use of closed-circuit television as a teaching tool for professional education; advanced types of radiologic perception in use of radioisotopes for "brain scans"; improved quality control automation of laboratory procedures in clinical pathology; application of electromyography as a dependable tool in evaluation of patients with neuromuscular disorders; formulation of radioactive pharmaceuticals for diagnosis and treatment; the use of plasmapheresis (the removal of blood for the purpose of obtaining a fractional component of the blood and returning the balance of the blood to the donor) for the supportive treatment of children with leukemia; development of new nutritional procedures for revised treatment of some metabolic diseases; the application of environmental sanitation measures to protect against hospital infections and other hazards.

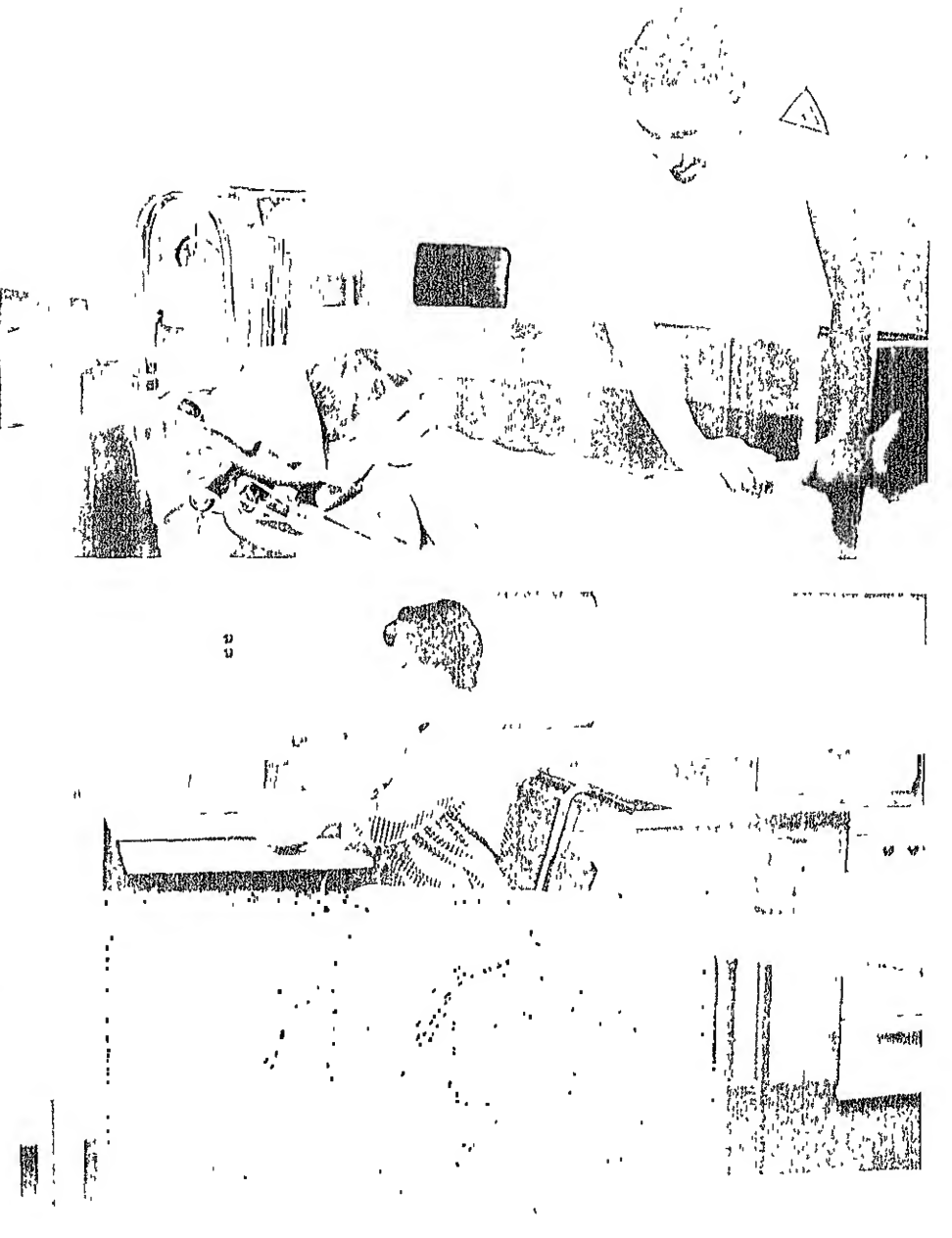
Findings related to improved hospital care and utilization of facilities are communicated broadly as members of the Clinical Center staff lecture and publish frequently. The Center itself has a large auditorium which is almost constantly in use for national and international medical meetings, lectures by world-renowned scientists, the showing of medical motion pictures, orientation of senior staff members of the Department of Health, Education, and Welfare, combined clinical staff conferences, or, on the lighter side, professional entertainment for the benefit of Clinical Center patients and their visitors.

Nurse and technician in operating room of Surgical Wing. Dome of visitors' gallery may be seen in background.



Technicians in Clinical Pathology Department examine Gram's stained smears.





A perspective on progress

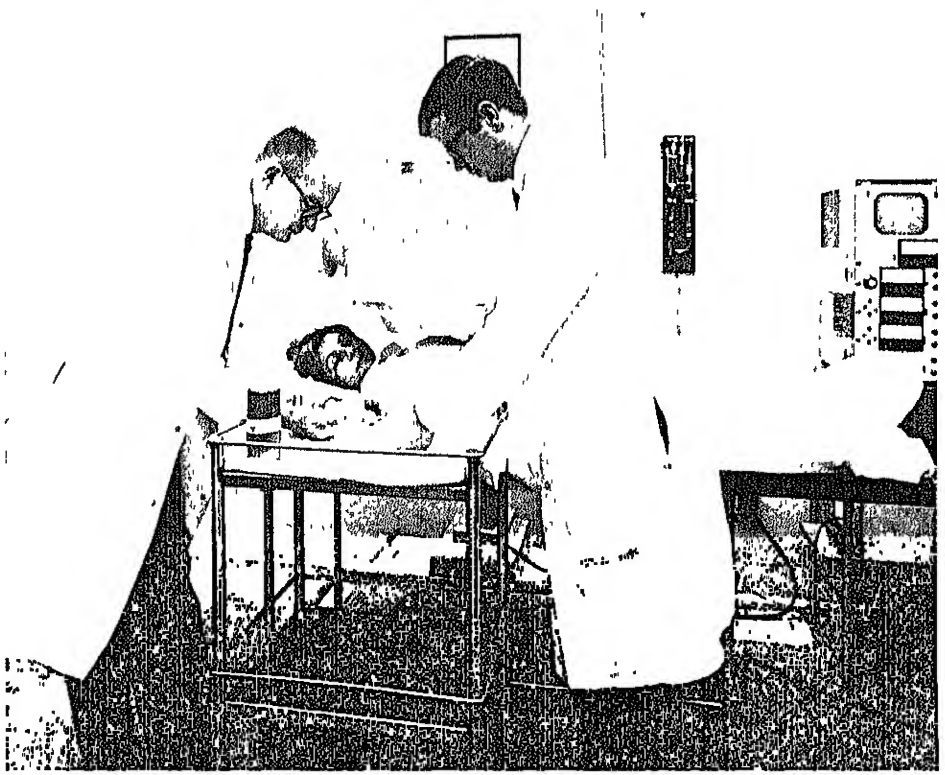
A visit to the 14th floor sundeck where patients like to relax is always included in a tour of the Clinical Center. This vantage point provides a helicopter-type view of the 300 acre NIH campus; and includes the skyline of the Nation's Capital just a few miles away.

However, a view of the Clinical Center's mission is much broader in perspective than this; it may be seen as a part of a great surge of medical progress in which all citizens have a share; the Clinical Center looks out upon the Nation and the world.

Neither the brick-and-mortar-type statistics concerning its 516 beds and 1,100 laboratory modules, nor the precise instruments that detect a millionth part of a chemical in a drop of blood, for example, or instantly total the number of cells in a sample, is the heart of this research program.

When research patients have proven that a new drug can cure a disease never before curable; when a child walks out of the hospital, his life and health extended through surgery that couldn't have been done just 10 years ago; that is the essence of the Clinical Center's mission.

Physicians in the Nuclear Medicine Department position a patient under the gamma scintillation camera for a diagnostic procedure to determine precise nature of heart defect.

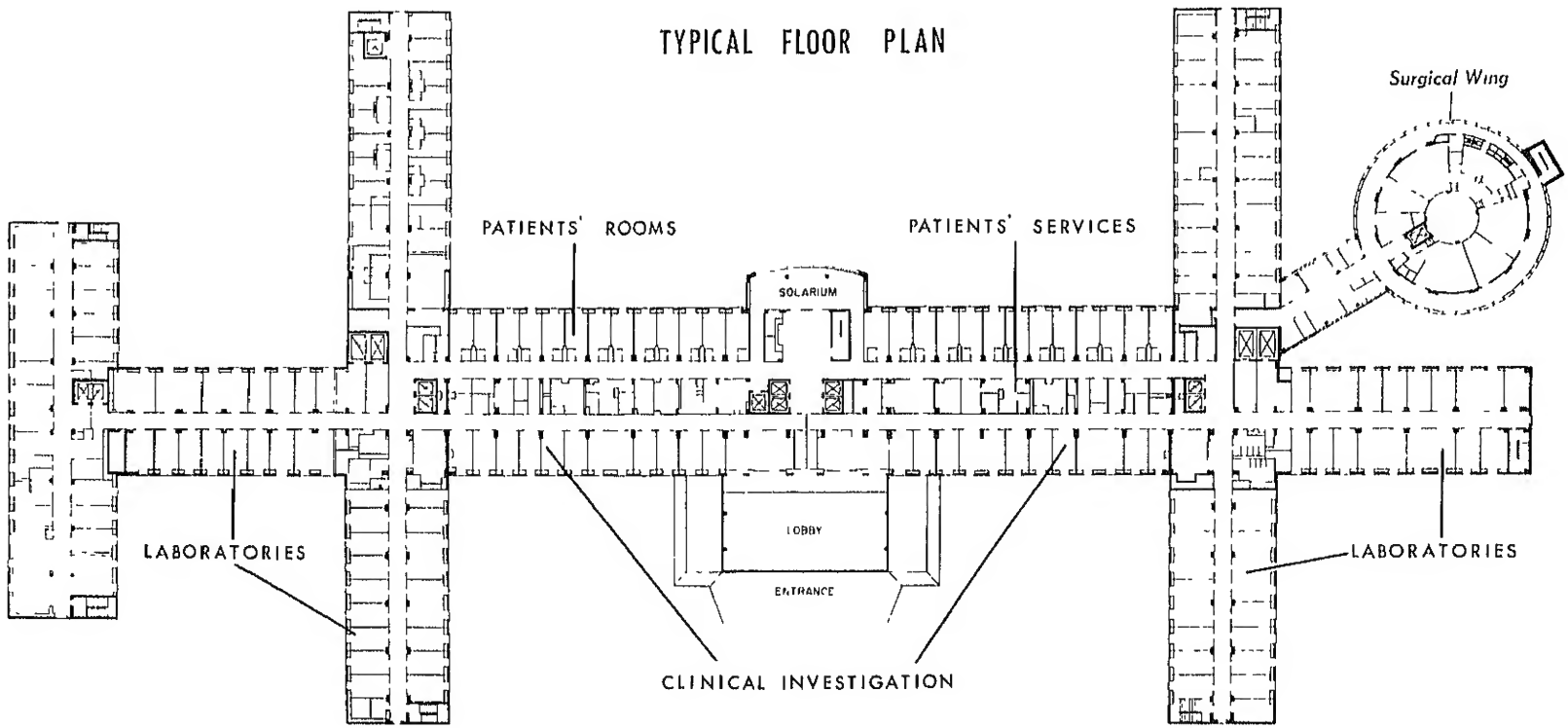


Upper left: Donor in the Clinical Center Blood Bank is giving some platelets for leukemia patients. Then the red cells will be returned to her. The plasmapheresis process makes this possible.

Lower left: Dietitian and aide prepare a metabolic balance study meal for a Clinical Center patient.

Upper right: Physical therapist exercises young patient in Hubbard Tank.

Lower right: This kitchen "proving ground" in the Rehabilitation Department helps physically handicapped patients.



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